

## **Attachment G-1**

### **Raw Data and Data Validation Summaries**

Classical Analysis (Bulk Density and Percent Moisture) Data and Data Validation

Radionuclide Analysis Data and Data Validation

TCLP Metal Analysis Data and Data Validation

Additional Radionuclide Analysis Data and Data Validation

**Classical Analysis (Bulk Density and Percent Moisture)  
Data and Data Validation**

# MISCELLANEOUS CLASSICAL ANALYSIS DATA SHEET

**Lab Name:** BWXS-NEL Services      **Contract:** K97-180459  
**Lab Code:** BWLVA      **LTI#:** 0105041  
**TOS#:** ER-SOW-380 Rev 0      **SDG#:** 1RD001013A  
**Matrix:** Sludge      **Date Received:** 05/02/2001-05/09/2001  
**Analyte:** Bulk Density

CUSTOMER ID	RESULT	UNITS	C	Q	DETECTION LIMIT	LAB ID	V
1RD001013A	1.0	g/mL			NA	0105041-01	
1RD001023A	1.0	g/mL			NA	0105041-02	
1RD001033A	1.0	g/mL			NA	0105041-03	
1RD001043A	1.0	g/mL			NA	0105041-04	
1RD001053A	1.0	g/mL			NA	0105041-05	
1RD002013A	0.8	g/mL			NA	0105041-06	
1RD002023A	2.7	g/mL			NA	0105041-07	
1RD002033A	1.5	g/mL			NA	0105041-08	
1RD002043A	1.4	g/mL			NA	0105041-09	
1RD002053A	3.4	g/mL			NA	0105041-10	
1RD003013A	1.0	g/mL			NA	0105041-11	
1RD003023A	1.0	g/mL			NA	0105041-12	
1RD003033A	1.0	g/mL			NA	0105041-13	
1RD003043A	1.0	g/mL			NA	0105041-14	
1RD003053A	1.0	g/mL			NA	0105041-15	
1RD004013A	1.7	g/mL			NA	0105041-16	
1RD004023A	1.4	g/mL			NA	0105041-17	
1RD004033A	1.6	g/mL			NA	0105041-18	
1RD004043A	1.8	g/mL			NA	0105041-19	
1RD004053A	2.2	g/mL			NA	0105041-20	
1RD005013A	2.4	g/mL			NA	0105041-21	
1RD005023A	1.3	g/mL			NA	0105041-22	
1RD005033A	1.5	g/mL			NA	0105041-23	

Qualifiers: U = Not Detected. Result less than detection limit.

**COMMENTS:** All samples analyzed "as received".

# MISCELLANEOUS CLASSICAL ANALYSIS DATA SHEET

**Lab Name:** BWXS-NEL Services      **Contract:** K97-180459  
**Lab Code:** BWLVA      **LTI#:** 0105041  
**TOS#:** ER-SOW-380 Rev 0      **SDG#:** 1RD001013A  
**Matrix:** Sludge      **Date Received:** 05/02/2001-05/09/2001  
**Analyte:** Bulk Density

CUSTOMER ID	RESULT	UNITS	C	Q	DETECTION LIMIT	LAB ID	V
1RD005043A	1.5	g/mL			NA	0105041-24	
1RD005053A	1.9	g/mL			NA	0105041-25	
1RD006013A	1.5	g/mL			NA	0105041-26	
1RD006023A	1.6	g/mL			NA	0105041-27	
1RD006033A	1.8	g/mL			NA	0105041-28	
1RD006043A	1.6	g/mL			NA	0105041-29	
1RD006053A	1.9	g/mL			NA	0105041-30	
1RD007013A	1.0	g/mL			NA	0105041-31	
1RD007023A	1.1	g/mL			NA	0105041-32	
1RD007033A	1.0	g/mL			NA	0105041-33	
1RD007043A	1.1	g/mL			NA	0105041-34	
1RD007053A	1.0	g/mL			NA	0105041-35	
1RD008013A	1.4	g/mL			NA	0105041-36	
1RD008023A	1.3	g/mL			NA	0105041-37	
1RD008033A	1.3	g/mL			NA	0105041-38	
1RD008043A	1.2	g/mL			NA	0105041-39	
1RD008053A	1.3	g/mL			NA	0105041-40	
1RD009013A	1.6	g/mL			NA	0105041-41	
1RD009023A	2.3	g/mL			NA	0105041-42	
1RD009033A	1.1	g/mL			NA	0105041-43	
1RD009043A	1.7	g/mL			NA	0105041-44	
1RD009053A	1.2	g/mL			NA	0105041-45	

Qualifiers: U = Not Detected. Result less than detection limit.

**COMMENTS:** All samples analyzed "as received".

# MISCELLANEOUS CLASSICAL ANALYSIS DATA SHEET

**Lab Name:** BWXS-NEL Services      **Contract:** K97-180459  
**Lab Code:** BWLVA      **LT#:** 0105041  
**TOS#:** ER-SOW-380 Rev 0      **SDG#:** 1RD001013A  
**Matrix:** Sludge      **Date Received:** 05/02/2001-05/09/2001  
**Analyte:** Percent Moisture

CUSTOMER ID	RESULT	UNITS	C	Q	DETECTION LIMIT	LAB ID	V
1RD001013A	98.0	%			NA	0105041-01	
1RD001023A	98.3	%			NA	0105041-02	
1RD001033A	97.9	%			NA	0105041-03	
1RD001043A	98.0	%			NA	0105041-04	
1RD001053A	98.1	%			NA	0105041-05	
1RD002013A	46.9	%			NA	0105041-06	
1RD002023A	46.7	%			NA	0105041-07	
1RD002033A	46.1	%			NA	0105041-08	
1RD002043A	46.3	%			NA	0105041-09	
1RD002053A	47.6	%			NA	0105041-10	
1RD003013A	97.4	%			NA	0105041-11	
1RD003023A	97.1	%			NA	0105041-12	
1RD003033A	93.2	%			NA	0105041-13	
1RD003043A	100.4	%			NA	0105041-14	
1RD003053A	97.0	%			NA	0105041-15	
1RD004013A	52.5	%			NA	0105041-16	
1RD004023A	53.1	%			NA	0105041-17	
1RD004033A	43.7	%			NA	0105041-18	
1RD004043A	54.8	%			NA	0105041-19	
1RD004053A	39.5	%			NA	0105041-20	
1RD005013A	55.7	%			NA	0105041-21	
1RD005023A	58.5	%			NA	0105041-22	
1RD005033A	64.7	%			NA	0105041-23	

Qualifiers: U = Not Detected. Result less than detection limit.

**COMMENTS:** All samples analyzed "as received".

# MISCELLANEOUS CLASSICAL ANALYSIS DATA SHEET

**Lab Name:** BWXS-NEL Services  
**Lab Code:** BWLVA  
**TOS#:** ER-SOW-380 Rev 0  
**Matrix:** Sludge  
**Analyte:** Percent Moisture

**Contract:** K97-180459  
**LTi#:** 0105041  
**SDG#:** 1RD001013A  
**Date Received:** 05/02/2001-05/09/2001

CUSTOMER ID	RESULT	UNITS	C	Q	DETECTION LIMIT	LAB ID	V
1RD005043A	55.9	%			NA	0105041-24	
1RD005053A	55.2	%			NA	0105041-25	
1RD006013A	43.6	%			NA	0105041-26	
1RD006023A	39.6	%			NA	0105041-27	
1RD006033A	37.0	%			NA	0105041-28	
1RD006043A	40.8	%			NA	0105041-29	
1RD006053A	41.0	%			NA	0105041-30	
1RD007013A	94.0	%			NA	0105041-31	
1RD007023A	94.3	%			NA	0105041-32	
1RD007033A	93.9	%			NA	0105041-33	
1RD007043A	94.4	%			NA	0105041-34	
1RD007053A	94.3	%			NA	0105041-35	
1RD008013A	66.9	%			NA	0105041-36	
1RD008023A	67.5	%			NA	0105041-37	
1RD008033A	66.4	%			NA	0105041-38	
1RD008043A	66.5	%			NA	0105041-39	
1RD008053A	67.1	%			NA	0105041-40	
1RD009013A	62.0	%			NA	0105041-41	
1RD009023A	62.4	%			NA	0105041-42	
1RD009033A	61.6	%			NA	0105041-43	
1RD009043A	59.9	%			NA	0105041-44	
1RD009053A	63.4	%			NA	0105041-45	

Qualifiers: U = Not Detected. Result less than detection limit.

**COMMENTS:** All samples analyzed "as received".

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# ORIGINAL

## INORGANIC AND MISCELLANEOUS CLASSICAL ANALYSES LIMITATIONS AND VALIDATION REPORT

### 1. TASK SPECIFIC VALIDATION IDENTIFICATION INFORMATION

<u>L&amp;V Report Number:</u>	DNT-104-01	<b>RECEIVED</b> JUN 12 2001 ENVIRONMENTAL RESTORATION DEPT.
<u>SDG Number:</u>	1RD001013A	
<u>SDG Type:</u>	3	
<u>Number of Samples:</u>	9	
<u>Sample Matrix:</u>	Sludge	
<u>Applicable Analytes:</u>	Bulk Density and Total Moisture	
<u>Reporting Tier:</u>	1	
<u>TOS Number:</u>	ER-SOW-380R1	
<u>TOS Title:</u>	Analyses of Samples Collected for the Tank V-9 (TSF-18) Sampling for Operable Unit 1-10 Project , Document No. ER-SOW-380R1	
<u>Analytical Laboratory:</u>	BWX Technologies, Inc. (BWXT)	
<u>LTI Number:</u>	0105041	
<u>Data Validator:</u>	David N. Thompson	
<u>Validator Affiliation:</u>	INEEL SMO	
<u>Validation Level:</u>	A	
<u>Completion Date:</u>	06/12/01	

## 2. IDV PRECAUTIONS AND LIMITATIONS

General precautions and limitations associated with inorganic and miscellaneous classical analyses analytical method data validation (IDV) are delineated in Section 2 of Technical Procedure (TPR)-132 (Reference 1) and are included in this Limitations and Validation (L&V) report as Attachment 5.

## 3. INTRODUCTION

A Level-A IDV [see Guide Document (GDE)-7003 (Reference 2)], following the procedures outlined in TPR-132, was performed on the inorganic and miscellaneous classical analyses data package (IDP), identified as sample delivery group (SDG) number 1RD001013A that was compiled by BWXT. TPR-132 is an Idaho National Engineering and Environmental Laboratory (INEEL) Sample Management Office (SMO) document that has revised the validation procedures outlined in the United States Environmental Protection Agency (USEPA) Functional Guidelines (Reference 3) to more aptly apply to IDPs prepared in accordance with the generic inorganic and miscellaneous classical analyses (I&MCA) statement of work [see ER-SOW-156 (Reference 4)] routinely requested by the INEEL SMO. Nine (9) sludge samples were collected for the Tank V-9 [Technical Support Facility (TSF)-18] Sampling for the Operable Unit (OU) 1-10 Project. BWXT was contracted to analyze the 9 sludge samples for Bulk Density and Total Moisture using the applicable ASTM Standard D5057-90 (Reference 5) and ASTM Standard E949-88 (Reference 6), respectively, in conjunction with both the task order statement of work [ER-SOW-380 (Reference 7)] and ER-SOW-156. Level-A IDV includes a data confirmation (see definition in Section 8) step.

## 4. SAMPLE IDENTIFICATION

According to ER-SOW-380 and each associated chain-of-custody (COC) form, BWXT was required to subdivide, or aliquot, each of the 9 sludge samples into five subsamples prior to analysis. The following table identifies and describes that relationship:

FIELD SAMPLE IDENTIFICATION NUMBER	ALIQUT OR SUBSAMPLE IDENTIFICATION NUMBER	LABORATORY IDENTIFICATION NUMBER	ORIGINAL SAMPLE MATRIX
1RD0010	1RD001013A	0105041-01	Sludge
	1RD001023A	0105041-02	Sludge
	1RD001033A	0105041-03	Sludge
	1RD001043A	0105041-04	Sludge
	1RD001053A	0105041-05	Sludge



FIELD SAMPLE IDENTIFICATION NUMBER	ALIQOT OR SUBSAMPLE IDENTIFICATION NUMBER	LABORATORY IDENTIFICATION NUMBER	ORIGINAL SAMPLE MATRIX
1RD0020	1RD002013A	0105041-06	Sludge
	1RD002023A	0105041-07	Sludge
	1RD002033A	0105041-08	Sludge
	1RD002043A	0105041-09	Sludge
	1RD002053A	0105041-10	Sludge
1RD0030	1RD003013A	0105041-11	Sludge
	1RD003023A	0105041-12	Sludge
	1RD003033A	0105041-13	Sludge
	1RD003043A	0105041-14	Sludge
	1RD003053A	0105041-15	Sludge
1RD0040	1RD004013A	0105041-16	Sludge
	1RD004023A	0105041-17	Sludge
	1RD004033A	0105041-18	Sludge
	1RD004043A	0105041-19	Sludge
	1RD004053A	0105041-20	Sludge
1RD0050	1RD005013A	0105041-21	Sludge
	1RD005023A	0105041-22	Sludge
	1RD005033A	0105041-23	Sludge
	1RD005043A	0105041-24	Sludge
	1RD005053A	0105041-25	Sludge
1RD0060	1RD006013A	0105041-26	Sludge
	1RD006023A	0105041-27	Sludge
	1RD006033A	0105041-28	Sludge
	1RD006043A	0105041-29	Sludge
	1RD006053A	0105041-30	Sludge
1RD0070	1RD007013A	0105041-31	Sludge
	1RD007023A	0105041-32	Sludge
	1RD007033A	0105041-33	Sludge
	1RD007043A	0105041-34	Sludge
	1RD007053A	0105041-35	Sludge
1RD0080	1RD008013A	0105041-36	Sludge
	1RD008023A	0105041-37	Sludge
	1RD008033A	0105041-38	Sludge
	1RD008043A	0105041-39	Sludge
	1RD008053A	0105041-40	Sludge
1RD0090	1RD009013A	0105041-41	Sludge
	1RD009023A	0105041-42	Sludge
	1RD009033A	0105041-43	Sludge
	1RD009043A	0105041-44	Sludge
	1RD009053A	0105041-45	Sludge

## 5. CONTRACT AND TECHNICAL REVIEW (CTR) COMMENTS

1. According to ER-SOW-380R1 and the associated COCs, the laboratory was required to subdivide, or aliquot, each of the 9 sludge samples into 5 subsamples. Due to the geophysical nature of the two analytical methods (bulk density and total moisture), the only applicable quality control parameter is the sample

duplicate. A SDG Type-3 Form #7 (Duplicate form) was not provided for this data. Although sample duplicate data were not typically reported, the laboratory essentially performed a duplicate for every sample, 5 fold. As mentioned in the Introduction in Section 3.0, this validation was performed by following the procedures outlined in TPR-132 and therefore, according to Section 4.3.11.5.3 for nonaqueous samples, the sample results were assessed based on their subsample's relative percent differences (RPDs) to each other. For each sample, the highest and lowest value reported from the five aliquots were used for this calculation. If the RPD was greater than 35% but less than or equal to 50%, the associated sample results were qualified with a "J" validation flag. If the RPD was greater than 50%, the associated sample results were qualified with a "R" validation flag.

Bulk Density results for sample 1RD0040 are qualified with a "J" validation flag due to a RPD of 44.4%. Bulk Density results for samples 1RD0020, 1RD0050, and 1RD0090 are qualified with a "R" validation flag due to RPDs of 123.8%, 59.4%, and 70.6%, respectively.

Total Moisture results were within the duplicate sample control limits and do not require qualification.

## 6.0 DATA LIMITATION OVERVIEW

### 6.1 Summary of Qualified Data

Sample 1RD0040 received a "J" validation qualifying flag for Bulk Density to denote that the data is detectable at the reported value but the reported value is only an estimate due to anomalies in the quality control data. Samples 1RD0020, 1RD0050, and 1RD0090 received "R" validation qualifying flags for Bulk Density to denote that the accuracy of the data is so questionable that it is recommended the data not be used. (see CTR comment #1)

### 6.2 Data Confirmation Summary

FIELD SAMPLE DATA POINTS ASSOCIATED WITH SDG# 1RD001013A				
Total Number	Number Confirmed	Number Confirmed to be Correctly Reported	Number Confirmed to be Falsely Reported	Actual Proportion Falsely Reported (%)
9	9	9	0	0

### 6.3 Data Assessment Sheet (page 1 of 2)

L&V Report#: DNT-104-01  
 SDG #: IRD001013A  
 TOS #: ER-SOW-380R1  
 SOW #: ER-SOW-156  
 LTI #: 0105041

Validation Level: A  
 SDG Type: 3  
 Reporting Tier: 1  
 Samples by Matrix: Sludge (9 samples)  
 Laboratory: BWX Technologies, Inc.

Assessor's Affiliation: INEEL SMO  
 Assessor's Name: David N. Thompson  
 Assessor's Signature: *David N. Thompson*  
 Assessment Date: 06/12/01

#### DATA ASSESSMENT SUMMARY TABLE

ITEM #	ASSESSMENT ITEM	ANALYTES	
		Bulk Density	Total Density
1.	Holding Time	0	0
2.	AQS Calibration	N/A	N/A
3.	ICV	N/A	N/A
4.	CCVs	N/A	N/A
5.	LLC Standards	N/A	N/A
6.	ICBs/CCBs	N/A	N/A
7.	Preparation Blank	N/A	N/A
8.	ICP ICSs	N/A	N/A
9.	Matrix Spike	N/A	N/A
10.	Analytical Spike	N/A	N/A
11.	Laboratory Duplicate	0	0
12.	MSD	N/A	N/A
13.	LCS	N/A	N/A
14.	MSA	N/A	N/A
15.	Serial Dilution	N/A	N/A
16.	LRA Standard	N/A	N/A
17.	CRC Standard	N/A	N/A
18.	Data Confirmation	0	0
19.	Miscellaneous Items	0	0
20.	Overall Assessment	0	0

6.3 Data Assessment Sheet (page 2 of 2)

DATA ASSESSMENT CODES

- O = Assessment item was within applicable control limits and, if considered alone, would not cause any data to be assigned a "UJ," "J," or "R" validation flag.
- M = Assessment item was outside applicable control limits and, if considered alone, would: (a) cause one or more field sample data points to be assigned either a "UJ" or "J" validation flag, but (b) not cause any data to be assigned a "R" validation flag.
- Z = Assessment item was outside applicable control limits and, if considered alone, would cause one or more field sample data points to be assigned a "R" validation flag.
- N/A = Assessment item is not applicable.
- NP = Assessment item was required but was not performed and/or documented by the laboratory.
- X = Contractual and/or technical anomalies were noted but, based on the professional judgement of the assessor, none of the associated data were adversely affected.
- I = Contractual and/or technical anomalies were noted and, based on the professional judgement of the assessor, at least a portion of the data were adversely affected and/or could not be properly assessed. As a result, at least one applicable field sample data point was qualified with either a "UJ," "J," or "R" validation flag.
- G = The units reported for at least one applicable field sample data point did not correlate with the test method employed.

COMMENTS: None.

#### 6.4 Data Validation Flag Table

SDG # 1RD001013A		
SAMPLE ID	ANALYTES	
	Bulk Density	Total Moisture
1RD0010		
1RD0020	R	
1RD0030		
1RD0040	J	
1RD0050	R	
1RD0060		
1RD0070		
1RD0080		
1RD0090	R	

#### DEFINITIONS OF DATA VALIDATION FLAGS

- U = The material was analyzed for and was detected at or above the applicable detection limit. However, the associated value was less than 5 times the highest positive amount in any laboratory blank. In most instances a "U" validation flag will be accompanied by a "B" laboratory flag.
- UJ = The material was analyzed for, but was not detected. The associated value is an estimate and may be inaccurate or imprecise. A "UJ" validation flag is not differentiated from the combined action of both a "U" and "J" validation flag.
- J = The material was analyzed for and was detected at or above the applicable detection limit. The associated value is an estimate and may be inaccurate or imprecise.
- R = The accuracy of the data is so questionable that it is recommended the data not be used. For any given data point, a "R" validation flag overrides all other applicable validation flags.

#### 6.5 Summary of Data Usability

There were 9 field sample data points associated with the SDG #1RD001013A IDP. Of these field sample data points: (a) 5 were assessed and left unqualified, (b) 1 was assessed and qualified with a "J" validation flag, and (c) 3 were assessed and qualified with a "R" validation flag. Using the criteria outlined in EPA540-R-93-071 (Reference 8): (1) the 5 field sample data points (55.6% of the total) that were assessed and left unqualified can be categorized as definitive data with no associated quality control deficiencies, (2) the 1 data

point (11.1% of the total) that was assessed and qualified with a "J" validation flag can be categorized as definitive data with a positively identified analyte concentration that is only an estimate due to quality control deficiencies, and (3) the 3 field data points (33.3% of the total) that were assessed and qualified with a "R" validation flag can be categorized as definitive data whose accuracy is so questionable that it is recommended the data not be used.

**7. FLAGRANT CONTRACTUAL DEFICIENCIES**

**7.1 Missed Holding Times**

None.

**7.2 Use of Unauthorized Methods**

None.

**7.3 Other**

None.

## **Radionuclide Analysis Data and Data Validation**





FORM I

## BBWI SAMPLE MANAGEMENT OFFICE

## RADIONUCLIDE ANALYSIS RESULTS

Date: May 29, 2001

Lab Name: BWLVA

Case No.: ER-SOW-380

Report No.: 0105041

SDG No.: 1RD001013A

BBWI ID	Lab ID	Sample Matrix	Anal Type	Sample Value	Sample Uncer	Units	Anal Date	Sample Date	Sample Size	Yield	Det ID	MDA
1RD001013A	0105041-01	Sludge	U-234	1.90E+02	1.58E+01	pCi/g	05/25/01	04/30/01	0.8088	57.2392	A06	5.09E-01
1RD001013A	0105041-01	Sludge	U-235	9.94E+00	1.36E+00	pCi/g	05/25/01	04/30/01	0.8088	57.2392	A06	3.29E-01
1RD001013A	0105041-01	Sludge	U-238	1.53E+00	4.62E-01	pCi/g	05/25/01	04/30/01	0.8088	57.2	A06	3.29E-01
1RD001023A	0105041-02	Sludge	U-234	1.73E+02	1.44E+01	pCi/g	05/25/01	04/30/01	0.8050	54.8	A07	6.51E-01
1RD001023A	0105041-02	Sludge	U-235	8.98E+00	1.25E+00	pCi/g	05/25/01	04/30/01	0.8050	54.8	A07	4.36E-01
1RD001023A	0105041-02	Sludge	U-238	1.39E+00	4.29E-01	pCi/g	05/25/01	04/30/01	0.8050	54.8	A07	3.12E-01
1RD001033A	0105041-03	Sludge	U-234	1.91E+02	1.60E+01	pCi/g	05/25/01	04/30/01	0.8040	57.9	A08	5.08E-01
1RD001033A	0105041-03	Sludge	U-235	1.01E+01	1.42E+00	pCi/g	05/25/01	04/30/01	0.8040	57.9	A08	3.64E-01
1RD001033A	0105041-03	Sludge	U-238	1.69E+00	5.11E-01	pCi/g	05/25/01	04/30/01	0.8040	57.9	A08	3.64E-01
1RD001043A	0105041-04	Sludge	U-234	1.69E+02	1.41E+01	pCi/g	05/25/01	04/30/01	0.8060	52.8	A18	5.19E-01
1RD001043A	0105041-04	Sludge	U-235	9.49E+00	1.31E+00	pCi/g	05/25/01	04/30/01	0.8060	52.8	A18	3.90E-01
1RD001043A	0105041-04	Sludge	U-238	7.14E-01	3.15E-01	pCi/g	05/25/01	04/30/01	0.8060	52.8	A18	3.21E-01
1RD001053A	0105041-05	Sludge	U-234	1.65E+02	1.36E+01	pCi/g	05/25/01	04/30/01	0.8251	63.8	A19	2.56E-01
1RD001053A	0105041-05	Sludge	U-235	9.94E+00	1.25E+00	pCi/g	05/25/01	04/30/01	0.8251	63.8	A19	2.56E-01
1RD001053A	0105041-05	Sludge	U-238	1.28E+00	3.73E-01	pCi/g	05/25/01	04/30/01	0.8251	63.8	A19	2.56E-01
1RD002013A	0105041-06	Sludge	U-234	1.55E+04	1.25E+03	pCi/g	05/25/01	04/30/01	0.0208	78.7	A20	1.19E+01
1RD002013A	0105041-06	Sludge	U-235	6.05E+02	6.60E+01	pCi/g	05/25/01	04/30/01	0.0208	78.7	A20	1.10E+01
1RD002013A	0105041-06	Sludge	U-238	1.33E+02	2.39E+01	pCi/g	05/25/01	04/30/01	0.0208	78.7	A20	1.10E+01
1RD002023A	0105041-07	Sludge	U-234	5.33E+03	4.46E+02	pCi/g	05/25/01	04/30/01	0.0208	74.7	A22	1.10E+01
1RD002023A	0105041-07	Sludge	U-235	2.31E+02	3.45E+01	pCi/g	05/25/01	04/30/01	0.0208	74.7	A22	9.85E+00
1RD002023A	0105041-07	Sludge	U-238	1.14E+02	2.26E+01	pCi/g	05/25/01	04/30/01	0.0208	74.7	A22	9.85E+00
1RD002033A	0105041-08	Sludge	U-234	6.93E+03	5.70E+02	pCi/g	05/25/01	04/30/01	0.0213	78.6	A23	8.48E+00
1RD002033A	0105041-08	Sludge	U-235	2.55E+02	3.49E+01	pCi/g	05/25/01	04/30/01	0.0213	78.6	A23	8.48E+00
1RD002033A	0105041-08	Sludge	U-238	1.11E+02	2.08E+01	pCi/g	05/25/01	04/30/01	0.0213	78.6	A23	8.48E+00
1RD002043A	0105041-09	Sludge	U-234	1.12E+04	9.08E+02	pCi/g	05/25/01	04/30/01	0.0221	72.1	A24	8.85E+00
1RD002043A	0105041-09	Sludge	U-235	3.34E+02	4.26E+01	pCi/g	05/25/01	04/30/01	0.0221	72.1	A24	8.85E+00
1RD002043A	0105041-09	Sludge	U-238	1.36E+02	2.40E+01	pCi/g	05/25/01	04/30/01	0.0221	72.1	A24	8.85E+00
1RD002053A	0105041-10	Sludge	U-234	8.85E+03	7.30E+02	pCi/g	05/28/01	04/30/01	0.0239	80.7	A03	1.13E+01
1RD002053A	0105041-10	Sludge	U-235	3.85E+02	4.78E+01	pCi/g	05/28/01	04/30/01	0.0239	80.7	A03	9.25E+00
1RD002053A	0105041-10	Sludge	U-238	1.00E+02	2.05E+01	pCi/g	05/28/01	04/30/01	0.0239	80.7	A03	9.25E+00
1RD003013A	0105041-11	Sludge	U-234	8.42E+01	6.94E+00	pCi/g	05/28/01	05/01/01	2.0319	76.7	A04	1.46E-01
1RD003013A	0105041-11	Sludge	U-235	4.49E+00	5.52E-01	pCi/g	05/28/01	05/01/01	2.0319	76.7	A04	1.62E-01
1RD003013A	0105041-11	Sludge	U-238	6.69E-01	1.81E-01	pCi/g	05/28/01	05/01/01	2.0319	76.7	A04	1.69E-01
1RD003023A	0105041-12	Sludge	U-234	8.96E+01	7.34E+00	pCi/g	05/28/01	05/01/01	2.0328	72.6	A05	1.35E-01
1RD003023A	0105041-12	Sludge	U-235	5.22E+00	6.09E-01	pCi/g	05/28/01	05/01/01	2.0328	72.6	A05	1.03E-01
1RD003023A	0105041-12	Sludge	U-238	8.31E-01	1.93E-01	pCi/g	05/28/01	05/01/01	2.0328	72.6	A05	1.03E-01
1RD003033A	0105041-13	Sludge	U-234	8.57E+01	7.02E+00	pCi/g	05/28/01	05/01/01	2.0310	79.7	A06	1.46E-01
1RD003033A	0105041-13	Sludge	U-235	5.66E+00	6.33E-01	pCi/g	05/28/01	05/01/01	2.0310	79.7	A06	9.43E-02

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## BBWI SAMPLE MANAGEMENT OFFICE

## RADIONUCLIDE ANALYSIS RESULTS

Date: May 29, 2001

Lab Name: BWLVA

Case No.: ER-SOW-380

Report No.: 0105041

SDG No.: 1RD001013A

BBWi ID	Lab ID	Sample Matrix	Anal Type	Sample Value	Sample Uncer	Units	Anal Date	Sample Date	Sample Size	Yield	Det ID	MDA
1RD003033A	0105041-13	Sludge	U-238	8.83E-01	1.92E-01	pCi/g	05/28/01	05/01/01	2.0310	79.7	A06	9.43E-02
1RD003043A	0105041-14	Sludge	U-234	8.62E+01	7.04E+00	pCi/g	05/28/01	05/01/01	2.0390	67.8	A07	2.08E-01
1RD003043A	0105041-14	Sludge	U-235	4.83E+00	5.71E-01	pCi/g	05/28/01	05/01/01	2.0390	67.8	A07	1.39E-01
1RD003043A	0105041-14	Sludge	U-238	5.91E-01	1.58E-01	pCi/g	05/28/01	05/01/01	2.0390	67.8	A07	9.96E-02
1RD003053A	0105041-15	Sludge	U-234	8.26E+01	6.80E+00	pCi/g	05/28/01	05/01/01	2.0225	87.3	A08	1.34E-01
1RD003053A	0105041-15	Sludge	U-235	4.21E+00	5.14E-01	pCi/g	05/28/01	05/01/01	2.0225	87.3	A08	9.60E-02
1RD003053A	0105041-15	Sludge	U-238	6.24E-01	1.60E-01	pCi/g	05/28/01	05/01/01	2.0225	87.3	A08	9.60E-02
1RD004013A	0105041-16	Sludge	U-234	1.38E+04	1.12E+03	pCi/g	05/28/01	05/02/01	0.0235	77.8	A22	9.32E+00
1RD004013A	0105041-16	Sludge	U-235	7.19E+02	7.42E+01	pCi/g	05/28/01	05/02/01	0.0235	77.8	A22	8.35E+00
1RD004013A	0105041-16	Sludge	U-238	3.66E+02	4.47E+01	pCi/g	05/28/01	05/02/01	0.0235	77.8	A22	8.35E+00
1RD004023A	0105041-17	Sludge	U-234	2.22E+04	1.78E+03	pCi/g	05/28/01	05/02/01	0.0202	82.3	A23	8.54E+00
1RD004023A	0105041-17	Sludge	U-235	8.98E+02	8.91E+01	pCi/g	05/28/01	05/02/01	0.0202	82.3	A23	8.54E+00
1RD004023A	0105041-17	Sludge	U-238	3.08E+02	3.98E+01	pCi/g	05/28/01	05/02/01	0.0202	82.3	A23	8.54E+00
1RD004033A	0105041-18	Sludge	U-234	7.44E+03	6.22E+02	pCi/g	05/29/01	05/02/01	0.0219	73.0	A03	1.36E+01
1RD004033A	0105041-18	Sludge	U-235	3.54E+02	4.78E+01	pCi/g	05/29/01	05/02/01	0.0219	73.0	A03	1.12E+01
1RD004033A	0105041-18	Sludge	U-238	3.03E+02	4.31E+01	pCi/g	05/29/01	05/02/01	0.0219	73.0	A03	1.12E+01
1RD004043A	0105041-19	Sludge	U-234	1.86E+04	1.51E+03	pCi/g	05/28/01	05/02/01	0.0200	72.0	A04	1.58E+01
1RD004043A	0105041-19	Sludge	U-235	7.57E+02	8.29E+01	pCi/g	05/28/01	05/02/01	0.0200	72.0	A04	1.75E+01
1RD004043A	0105041-19	Sludge	U-238	3.78E+02	5.04E+01	pCi/g	05/28/01	05/02/01	0.0200	72.0	A04	1.83E+01
1RD004053A	0105041-20	Sludge	U-234	8.41E+03	6.92E+02	pCi/g	05/28/01	05/02/01	0.0206	75.6	A05	1.28E+01
1RD004053A	0105041-20	Sludge	U-235	3.74E+02	4.75E+01	pCi/g	05/28/01	05/02/01	0.0206	75.6	A05	9.75E+00
1RD004053A	0105041-20	Sludge	U-238	2.38E+02	3.51E+01	pCi/g	05/28/01	05/02/01	0.0206	75.6	A05	9.75E+00
1RD005013A	0105041-21	Sludge	U-234	7.03E+03	5.82E+02	pCi/g	05/28/01	05/03/01	0.0210	75.4	A06	1.49E+01
1RD005013A	0105041-21	Sludge	U-235	4.00E+02	4.96E+01	pCi/g	05/28/01	05/03/01	0.0210	75.4	A06	9.64E+00
1RD005013A	0105041-21	Sludge	U-238	4.14E+02	5.08E+01	pCi/g	05/28/01	05/03/01	0.0210	75.4	A06	9.64E+00
1RD005023A	0105041-22	Sludge	U-234	2.16E+04	1.74E+03	pCi/g	05/28/01	05/03/01	0.0211	69.6	A07	1.96E+01
1RD005023A	0105041-22	Sludge	U-235	1.22E+03	1.16E+02	pCi/g	05/28/01	05/03/01	0.0211	69.6	A07	1.31E+01
1RD005023A	0105041-22	Sludge	U-238	1.05E+03	1.03E+02	pCi/g	05/28/01	05/03/01	0.0211	69.6	A07	9.38E+00
1RD005033A	0105041-23	Sludge	U-234	8.21E+03	6.74E+02	pCi/g	05/28/01	05/03/01	0.0259	86.6	A08	1.06E+01
1RD005033A	0105041-23	Sludge	U-235	4.78E+02	5.30E+01	pCi/g	05/28/01	05/03/01	0.0259	86.6	A08	7.56E+00
1RD005033A	0105041-23	Sludge	U-238	4.28E+02	4.88E+01	pCi/g	05/28/01	05/03/01	0.0259	86.6	A08	7.56E+00
1RD005043A	0105041-24	Sludge	U-234	1.32E+04	1.06E+03	pCi/g	05/28/01	05/03/01	0.0225	76.9	A18	1.28E+01
1RD005043A	0105041-24	Sludge	U-235	7.73E+02	7.77E+01	pCi/g	05/28/01	05/03/01	0.0225	76.9	A18	9.61E+00
1RD005043A	0105041-24	Sludge	U-238	5.81E+02	6.03E+01	pCi/g	05/28/01	05/03/01	0.0225	76.9	A18	7.89E+00
1RD005053A	0105041-25	Sludge	U-234	2.01E+04	1.61E+03	pCi/g	05/28/01	05/03/01	0.0234	70.4	A19	8.18E+00
1RD005053A	0105041-25	Sludge	U-235	1.14E+03	1.08E+02	pCi/g	05/28/01	05/03/01	0.0234	70.4	A19	8.18E+00
1RD005053A	0105041-25	Sludge	U-238	1.33E+03	1.23E+02	pCi/g	05/28/01	05/03/01	0.0234	70.4	A19	8.18E+00
1RD006013A	0105041-26	Sludge	U-234	2.38E+04	1.99E+03	pCi/g	05/28/01	05/08/01	0.0085	78.2	A20	2.92E+01

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## BBWI SAMPLE MANAGEMENT OFFICE

## RADIONUCLIDE ANALYSIS RESULTS

Date: May 29, 2001

Lab Name: BWLVA

Case No.: ER-SOW-380

Report No.: 0105041

SDG No.: 1RD001013A

BBWI ID	Lab ID	Sample Matrix	Anal Type	Sample Value	Sample Uncer	Units	Anal Date	Sample Date	Sample Size	Yield	Det ID	MDA
1RD006013A	0105041-26	Sludge	U-235	1.13E+03	1.34E+02	pCi/g	05/28/01	05/08/01	0.0085	78.2	A20	2.72E+01
1RD006013A	0105041-26	Sludge	U-238	8.18E+02	1.06E+02	pCi/g	05/28/01	05/08/01	0.0085	78.2	A20	2.72E+01
1RD006023A	0105041-27	Sludge	U-234	2.75E+04	2.30E+03	pCi/g	05/28/01	05/08/01	0.0083	78.7	A22	2.61E+01
1RD006023A	0105041-27	Sludge	U-235	1.25E+03	1.46E+02	pCi/g	05/28/01	05/08/01	0.0083	78.7	A22	2.34E+01
1RD006023A	0105041-27	Sludge	U-238	9.72E+02	1.22E+02	pCi/g	05/28/01	05/08/01	0.0083	78.7	A22	2.34E+01
1RD006033A	0105041-28	Sludge	U-234	1.73E+04	1.46E+03	pCi/g	05/28/01	05/08/01	0.0084	79.8	A23	2.12E+01
1RD006033A	0105041-28	Sludge	U-235	1.11E+03	1.31E+02	pCi/g	05/28/01	05/08/01	0.0084	79.8	A23	2.12E+01
1RD006033A	0105041-28	Sludge	U-238	1.19E+03	1.37E+02	pCi/g	05/28/01	05/08/01	0.0084	79.8	A23	2.12E+01
1RD006043A	0105041-29	Sludge	U-234	1.46E+04	1.23E+03	pCi/g	05/28/01	05/08/01	0.0094	77.0	A24	1.95E+01
1RD006043A	0105041-29	Sludge	U-235	7.47E+02	9.57E+01	pCi/g	05/28/01	05/08/01	0.0094	77.0	A24	1.95E+01
1RD006043A	0105041-29	Sludge	U-238	9.30E+02	1.12E+02	pCi/g	05/28/01	05/08/01	0.0094	77.0	A24	1.95E+01
1RD006053A	0105041-30	Sludge	U-234	1.37E+04	1.17E+03	pCi/g	05/29/01	05/08/01	0.0088	71.1	A07	4.59E+01
1RD006053A	0105041-30	Sludge	U-235	8.21E+02	1.06E+02	pCi/g	05/29/01	05/08/01	0.0088	71.1	A07	3.07E+01
1RD006053A	0105041-30	Sludge	U-238	7.41E+02	9.87E+01	pCi/g	05/29/01	05/08/01	0.0088	71.1	A07	2.20E+01
1RD007013A	0105041-31	Sludge	U-234	5.04E+02	4.14E+01	pCi/g	05/29/01	05/03/01	0.4124	85.5	A08	6.70E-01
1RD007013A	0105041-31	Sludge	U-235	2.65E+01	3.04E+00	pCi/g	05/29/01	05/03/01	0.4124	85.5	A08	4.80E-01
1RD007013A	0105041-31	Sludge	U-238	1.07E+01	1.63E+00	pCi/g	05/29/01	05/03/01	0.4124	85.5	A08	4.80E-01
1RD007023A	0105041-32	Sludge	U-234	4.80E+02	3.91E+01	pCi/g	05/29/01	05/03/01	0.4046	82.0	A18	6.66E-01
1RD007023A	0105041-32	Sludge	U-235	2.83E+01	3.06E+00	pCi/g	05/29/01	05/03/01	0.4046	82.0	A18	5.01E-01
1RD007023A	0105041-32	Sludge	U-238	1.01E+01	1.48E+00	pCi/g	05/29/01	05/03/01	0.4046	82.0	A18	4.11E-01
1RD007033A	0105041-33	Sludge	U-234	3.86E+02	3.16E+01	pCi/g	05/29/01	05/03/01	0.4004	75.4	A19	4.46E-01
1RD007033A	0105041-33	Sludge	U-235	1.88E+01	2.31E+00	pCi/g	05/29/01	05/03/01	0.4004	75.4	A19	4.46E-01
1RD007033A	0105041-33	Sludge	U-238	5.59E+00	1.07E+00	pCi/g	05/29/01	05/03/01	0.4004	75.4	A19	4.46E-01
1RD007043A	0105041-34	Sludge	U-234	5.08E+02	4.16E+01	pCi/g	05/29/01	05/03/01	0.4043	76.2	A20	6.30E-01
1RD007043A	0105041-34	Sludge	U-235	2.79E+01	3.16E+00	pCi/g	05/29/01	05/03/01	0.4043	76.2	A20	5.86E-01
1RD007043A	0105041-34	Sludge	U-238	1.03E+01	1.60E+00	pCi/g	05/29/01	05/03/01	0.4043	76.2	A20	5.86E-01
1RD007053A	0105041-35	Sludge	U-234	4.48E+02	3.68E+01	pCi/g	05/29/01	05/03/01	0.4036	76.0	A22	5.57E-01
1RD007053A	0105041-35	Sludge	U-235	2.39E+01	2.84E+00	pCi/g	05/29/01	05/03/01	0.4036	76.0	A22	4.99E-01
1RD007053A	0105041-35	Sludge	U-238	7.82E+00	1.37E+00	pCi/g	05/29/01	05/03/01	0.4036	76.0	A22	4.99E-01
1RD008013A	0105041-36	Sludge	U-234	4.11E+03	3.35E+02	pCi/g	05/29/01	05/03/01	0.0408	81.2	A23	4.28E+00
1RD008013A	0105041-36	Sludge	U-235	1.73E+02	2.18E+01	pCi/g	05/29/01	05/03/01	0.0408	81.2	A23	4.28E+00
1RD008013A	0105041-36	Sludge	U-238	2.50E+01	6.76E+00	pCi/g	05/29/01	05/03/01	0.0408	81.2	A23	4.28E+00
1RD008023A	0105041-37	Sludge	U-234	4.06E+03	3.30E+02	pCi/g	05/29/01	05/03/01	0.0453	78.2	A24	3.98E+00
1RD008023A	0105041-37	Sludge	U-235	1.69E+02	2.07E+01	pCi/g	05/29/01	05/03/01	0.0453	78.2	A24	3.98E+00
1RD008023A	0105041-37	Sludge	U-238	1.85E+01	5.58E+00	pCi/g	05/29/01	05/03/01	0.0453	78.2	A24	3.98E+00
1RD008033A	0105041-38	Sludge	U-234	4.45E+03	3.67E+02	pCi/g	05/29/01	05/03/01	0.0452	80.6	A03	5.97E+00
1RD008033A	0105041-38	Sludge	U-235	1.41E+02	1.96E+01	pCi/g	05/29/01	05/03/01	0.0452	80.6	A03	4.90E+00
1RD008033A	0105041-38	Sludge	U-238	1.64E+01	5.84E+00	pCi/g	05/29/01	05/03/01	0.0452	80.6	A03	4.90E+00

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## BBWI SAMPLE MANAGEMENT OFFICE

## RADIONUCLIDE ANALYSIS RESULTS

Date: May 29, 2001

Lab Name: BWLVA

Case No.: ER-SOW-380

Report No.: 0105041

SDG No.: 1RD001013A

BBWI ID	Lab ID	Sample Matrix	Anal Type	Sample Value	Sample Uncer	Units	Anal Date	Sample Date	Sample Size	Yield	Det ID	MDA
1RD008043A	0105041-39	Sludge	U-234	3.72E+03	3.06E+02	pCi/g	05/29/01	05/03/01	0.0408	85.0	A04	6.55E+00
1RD008043A	0105041-39	Sludge	U-235	1.65E+02	2.16E+01	pCi/g	05/29/01	05/03/01	0.0408	85.0	A04	7.27E+00
1RD008043A	0105041-39	Sludge	U-238	1.87E+01	6.55E+00	pCi/g	05/29/01	05/03/01	0.0408	85.0	A04	7.60E+00
1RD008053A	0105041-40	Sludge	U-234	4.64E+03	3.78E+02	pCi/g	05/29/01	05/03/01	0.0440	81.4	A05	5.56E+00
1RD008053A	0105041-40	Sludge	U-235	1.90E+02	2.30E+01	pCi/g	05/29/01	05/03/01	0.0440	81.4	A05	4.24E+00
1RD008053A	0105041-40	Sludge	U-238	2.95E+01	7.34E+00	pCi/g	05/29/01	05/03/01	0.0440	81.4	A05	4.24E+00
1RD009013A	0105041-41	Sludge	U-234	2.75E+03	2.29E+02	pCi/g	05/29/01	05/07/01	0.0432	80.8	A06	6.77E+00
1RD009013A	0105041-41	Sludge	U-235	1.07E+02	1.57E+01	pCi/g	05/29/01	05/07/01	0.0432	80.8	A06	4.37E+00
1RD009013A	0105041-41	Sludge	U-238	1.22E+01	4.77E+00	pCi/g	05/29/01	05/07/01	0.0432	80.8	A06	4.37E+00
1RD009023A	0105041-42	Sludge	U-234	3.34E+03	2.75E+02	pCi/g	05/29/01	05/07/01	0.0432	72.0	A07	9.24E+00
1RD009023A	0105041-42	Sludge	U-235	1.34E+02	1.84E+01	pCi/g	05/29/01	05/07/01	0.0432	72.0	A07	6.18E+00
1RD009023A	0105041-42	Sludge	U-238	1.11E+01	4.60E+00	pCi/g	05/29/01	05/07/01	0.0432	72.0	A07	4.43E+00
1RD009033A	0105041-43	Sludge	U-234	3.98E+03	3.27E+02	pCi/g	05/29/01	05/07/01	0.0467	88.6	A08	5.72E+00
1RD009033A	0105041-43	Sludge	U-235	1.39E+02	1.83E+01	pCi/g	05/29/01	05/07/01	0.0467	88.6	A08	4.10E+00
1RD009033A	0105041-43	Sludge	U-238	1.48E+01	5.08E+00	pCi/g	05/29/01	05/07/01	0.0467	88.6	A08	4.10E+00
1RD009043A	0105041-44	Sludge	U-234	3.36E+03	2.74E+02	pCi/g	05/29/01	05/07/01	0.0401	80.8	A18	5.46E+00
1RD009043A	0105041-44	Sludge	U-235	9.89E+01	1.37E+01	pCi/g	05/29/01	05/07/01	0.0401	80.8	A18	4.11E+00
1RD009043A	0105041-44	Sludge	U-238	1.38E+01	4.43E+00	pCi/g	05/29/01	05/07/01	0.0401	80.8	A18	3.37E+00
1RD009053A	0105041-45	Sludge	U-234	3.73E+03	3.04E+02	pCi/g	05/29/01	05/07/01	0.0423	80.2	A19	3.97E+00
1RD009053A	0105041-45	Sludge	U-235	1.26E+02	1.69E+01	pCi/g	05/29/01	05/07/01	0.0423	80.2	A19	3.97E+00
1RD009053A	0105041-45	Sludge	U-238	1.14E+01	4.40E+00	pCi/g	05/29/01	05/07/01	0.0423	80.2	A19	3.97E+00

Comments: